



NAAHTWG Slide of the Quarter (April - June 2005) - *Cyprinid herpesvirus 2*

History

A commercial goldfish farm raising fish for the local aquarium market experienced 60 per cent mortalities in 20 mm fish in a grow-out pond over a seven-day period. Koi carp that were also in the pond remained unaffected.

Gross Pathology

Wet preparations of the gills showed a frayed appearance and the capsular surface of the kidney had a granular appearance.

Histopathology

AS-03-4048

Kidney

Lymphoid tissue shows severe, widespread necrosis with oedema and fibrin exudation and scattered karyorrhectic debris with relative sparing of the intervening renal tubules (Fig. 1). Some remaining lymphoid cells show marginated chromatin or appear to be large basophilic-staining degenerate or possibly blastic, lymphoid cells.

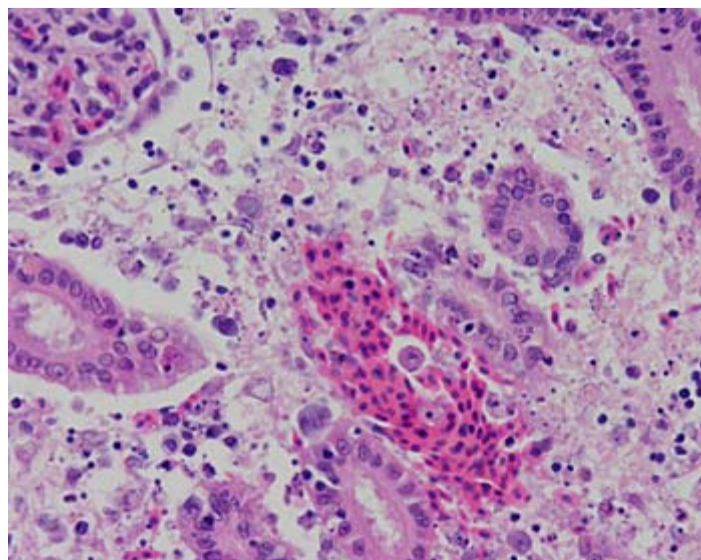


Figure 1

Spleen



There has been considerable necrosis of lymphoid cells with abundant karyorrhectic debris and fibrin exudation in the capsular areas that extends into the adjacent adipose and pancreatic tissue (Figs. 2 and 3). Erythroid zones in the spleen appear relatively unaffected.

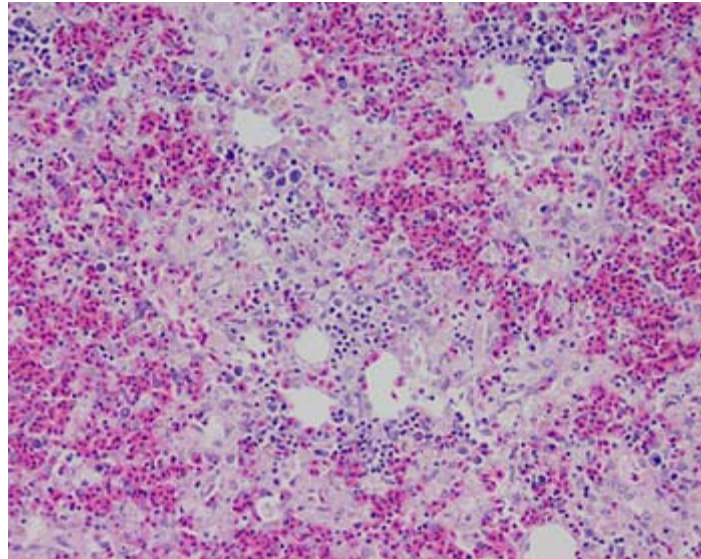


Figure 2

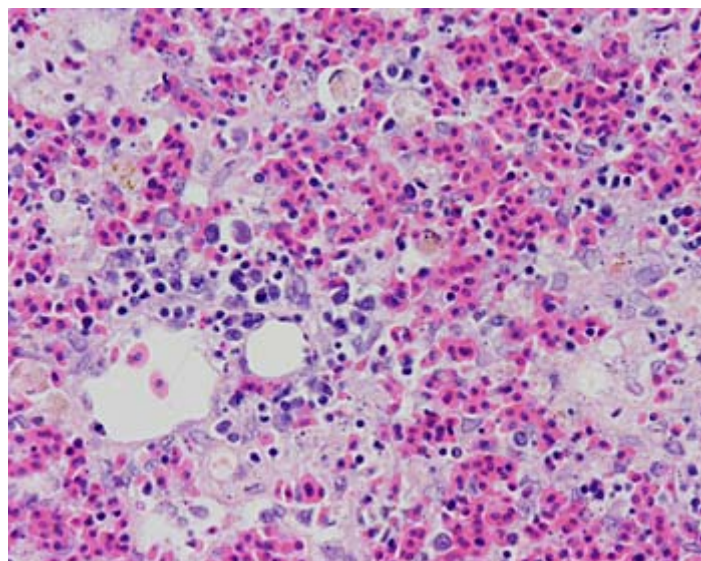


Figure 3

Intestine

The lamina propria is infiltrated by mononuclear inflammatory cells - lymphoid cells and large cells to 15 μ m diameter with abundant eosinophilic cytoplasm (that are interpreted to be histiocytes). One cross section of intestine shows a more severe necrotising response with scattered karyorrhectic debris.



Government of **Western Australia**
Department of **Fisheries**



Gills

There is multifocal acute necrosis of lamellar epithelial cells, fusion of lamellae and focal lymphocytic aggregations (Fig. 4).

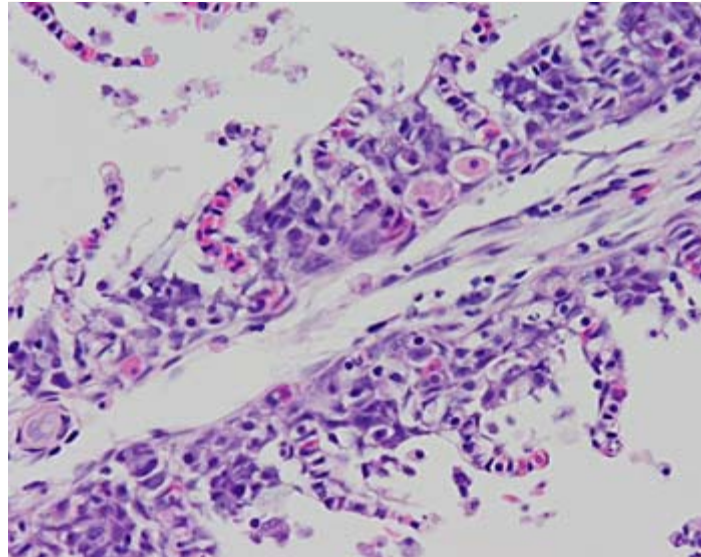


Figure 4

Morphological Diagnosis

Severe, acute to subacute, multifocal and coalescing splenic and renal lymphoid necrosis.

Electron Micrograph

Numerous 100 nM icosahedral nucleocapsids surrounded by membranes in the nucleus (open arrow) and enveloped virions in the cytoplasm (arrow) – see Fig. 5). The particles are consistent in morphology with a herpesvirus.

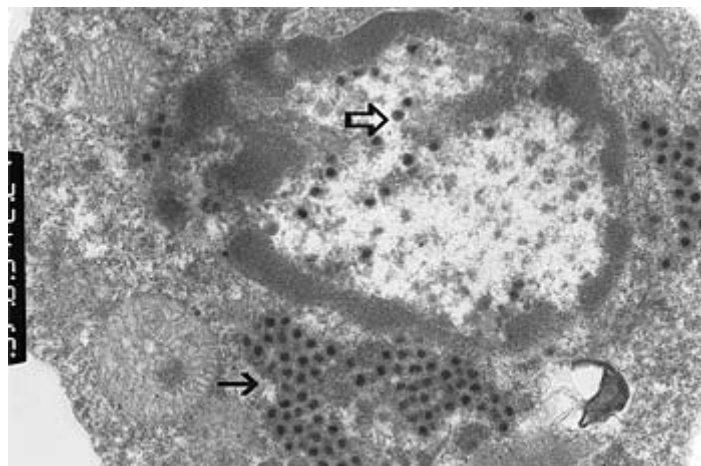


Figure 5



Aetiological Diagnosis

Cyprinid herpesvirus 2 = haematopoietic necrosis herpesvirus of goldfish.

Comment

There are three cyprinid viruses in the family *Herpesviridae*: carp pox herpesvirus (*Cyprinid herpesvirus 1*, CyHV-1), haematopoietic necrosis herpesvirus of goldfish (*Cyprinid herpesvirus 2*, CyHV-2) and koi herpesvirus (KHV) (*Cyprinid herpesvirus 3*, CyHV-3).

Haematopoietic necrosis herpesvirus of goldfish was first seen in Australia in 2002.

Histological lesions described with this viral infection consistently involve necrotising lesions in the spleen (pulp and sheathed arteries) and haematopoietic regions of the kidney with a variable necrotising and inflammatory response within the intestinal lamina propria and submucosa, the gills and pancreas.

This case appears to have similar lesions to those published.

NAAHTWG - National Aquatic Animal Health Technical Working Group